Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claim 1 (Original): A method for generating a phase-modulated wave front of electromagnetic radiation comprising the steps of:

providing an input wave front of electromagnetic radiation, $E(x,y)$,

performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front to generate a spatial amplitude distribution $a(x,y)$ in the electromagnetic radiation in a plane transverse to a direction of propagation of the electromagnetic radiation,

Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution of the amplitude-modulated wave front $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

filtering the Fourier or Fresnel distribution by phase shifting one or more first components in relation to one or more second components of the Fourier or Fresnel

distribution $\tilde{a}(f_x,f_y)$ and/or damping one or more third components in relation to one or more fourth components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ by a spatial filter having a filter function $H(f_x,f_y)$ giving the phase shift and/or damping for each component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation whereby a phase-modulated wave front $o(x',y')$ is formed, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

Claim 2 (Original): A method according to claim 1, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, in order to generate a predetermined phase-modulation.

Claim 3 (Original): A method according to claim 2, further comprising the step of providing means for performing the spatial amplitude modulation $\alpha(x,y)$ and/or the spatial filter which are addressable and adapted to receive one or more control signals controlling the spatial amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the method further comprising the step of addressing the means for performing the spatial amplitude modulation and/or the spatial filter, and transmitting said one or more control signals.

Claim 4 (Original): A method according to claim 1, the method being characterized in that the generated phase-modulated wave front o(x',y') has an at least substantially constant amplitude in a plane transverse to a direction of propagation of the phase-modulated wave front.

Claim 5 (Currently Amended): A method according to claim 1, wherein [[the]] <u>a</u> spatial phase distribution of the input wave front E(x,y) is at least substantially constant over the <u>input</u> wave front.

Claim 6 (Currently Amended): A method according to claim 1, wherein the input <u>electromagnetic</u> radiation is at least substantially spatially and temporally coherent.

Claim 7 (Original): A method according to claim 1, wherein the step of performing the spatial amplitude modulation further comprises the step of defining a transverse spatial profile of the amplitude modulated wave front a(x,y).

Claim 8 (Original): A method according to claim 1, wherein the spatial amplitude modulation is performed by an optical element providing a substantially continuous variation of absorption and/or reflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

Claim 9 (Original): A method according to claim 1, wherein the spatial amplitude modulation is performed by an optical element comprising a matrix of absorbing and/or reflecting elements.

Claim 10 (Original): A method according to claim 9, wherein the absorbing and/or reflecting elements are individually addressable so as to individually control the absorption and/or reflection of each element.

Claim 11 (Currently Amended): A method according to claim 1, wherein the Fourier or Fresnel transformation and/or the inverse Fourier or <u>inverse</u> Fresnel transformation is performed by a lens or a diffracting pattern.

Claim 12 (Original): A method according to claim 1, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

Claim 13 (Original): A method according to claim 12, further comprising the step of individually controlling one or more phase shifting and/or damping elements in order to individually control the phase shift and/or damping of one or more components of the Fourier or Fresnel distribution.

Claim 14 (Original): A method according to claim 1, wherein the spatial amplitude modulation $\alpha(x,y)$ has three or more different values, the method further comprising the step of, after the inverse Fourier transformation or the inverse Fresnel transformation, performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front $o(x',y')$ to generate an at least substantially constant amplitude distribution.

Claim 15 (Original): A method for generating a phase-modulated wave front of electromagnetic radiation comprising the steps of:

providing an input wave front of electromagnetic radiation, $E(x,y)$,

performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front to generate a spatial amplitude distribution $a(x,y)$ in the electromagnetic radiation in a plane transverse to a direction of propagation of the electromagnetic radiation,

Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution of the amplitude-modulated wave front $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

filtering the Fourier or Fresnel distribution by phase shifting at least part of a zero-order

component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution and/or damping a zero-order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution by a spatial filter having a filter function $H(f_x,f_y)$ giving the phase shift and/or damping of the zero-order component in relation to higher-order components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation whereby a phase-modulated wave front $o(x',y')$ is formed, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

Claim 16 (Original): A method according to claim 15, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, in order to generate a predetermined phase-modulation.

Claim 17 (Original): A method according to claim 16, further comprising the step of providing means for performing the spatial amplitude modulation $\alpha(x,y)$ and/or the spatial filter which are addressable and adapted to receive one or more control signals controlling the spatial amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the method further comprising the step of addressing the means for performing the spatial

amplitude modulation and/or the spatial filter, and transmitting said one or more control signals.

Claim 18 (Original): A method according to claim 15, the method being characterized in that the generated phase-modulated wave front o(x',y') has an at least substantially constant amplitude in a plane transverse to a direction of propagation of the phase-modulated wave front.

Claim 19 (Currently Amended): A method according to claim 15, wherein [[the]] <u>a</u> spatial phase distribution of the input wave front E(x,y) is at least substantially constant over the <u>input</u> wave front.

Claim 20 (Currently Amended): A method according to claim 15, wherein the input <u>electromagnetic</u> radiation is at least substantially spatially and temporally coherent.

Claim 21 (Original): A method according to claim 15, wherein the step of performing the spatial amplitude modulation further comprises the step of defining a transverse spatial profile of the amplitude modulated wave front a(x,y).

Claim 22 (Original): A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ is performed by an optical element providing a substantially

continuous variation of absorption and/or reflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

Claim 23 (Original): A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ is performed by an optical element comprising a matrix of absorbing and/or reflecting elements.

Claim 24 (Original): A method according to claim 23, wherein the absorbing and/or reflecting elements are individually addressable so as to individually control the absorption and/or reflection of each element.

Claim 25 (Currently Amended): A method according to claim 15, wherein the Fourier or Fresnel transformation and/or the inverse Fourier or <u>inverse</u> Fresnel transformation is performed by a lens or a diffracting pattern.

Claim 26 (Original): A method according to claim 15, wherein the spatial filter is a phase contrast filter.

Claim 27 (Original): A method according to claim 15, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

Claim 28 (Original): A method according to claim 27, further comprising the step of individually controlling one or more phase shifting and/or damping elements in order to individually control the phase shift and/or damping of the zero-order component of the Fourier or Fresnel distribution in relation to higher-order components of the Fourier or Fresnel distribution.

Claim 29 (Currently Amended): A method according to claim 15, wherein the <u>spatial</u> amplitude modulation $\alpha(x,y)$ has a minimum value $Min(\alpha(x,y))$, a maximum value $Max(\alpha(x,y))$ and an average value $\overline{\alpha}$, and wherein the spatial filter has a central part for performing the filtering of the zero order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ and a surrounding part for performing the filtering of the higher order components, the surrounding part having a transmittivity or reflectivity ~~$A \in]0;1]$~~ <u>A in the range $0 < A \leq 1$</u> and the central part having a transmittivity or reflectivity ~~$B \in [0;1]$,~~ <u>B in the range $0 \leq B \leq 1$,</u> and the relative phase shift of radiation filtered by the central part and the surrounding part being [[0]] <u>θ</u>, where A, B, and θ are variables of the filter function $H(f_x,f_y)$ and forms a combined filter term C expressed as

$$C = \frac{B}{A}e^{i\theta} - 1 = |C|e^{i\Psi_C}.$$

Claim 30 (Currently Amended): A method according to claim 29, wherein $H(f_x,f_y)$ is

adjusted to have A = B = 1 and $\theta = \pi$, and wherein the spatial amplitude modulation $\alpha(x,y)$ is performed according to

$$\cancel{a(x,y) = b(x,y)+\bar{b}[\tfrac{1}{2}-\bar{g}]^{-1}\, g(r),}$$

$$\underline{a(x,y) = b(x,y)+\bar{b}\{\tfrac{1}{2}-\bar{g}\}^{-1}\, g(r),}$$

where b(x,y) is a binary function with an average value $\bar{b}$, g(r) is a function which ~~counterbalance~~ counterbalances effects represented by a synthetic reference wave g(r') ~~of the system~~, and $\bar{g}$ is the average value of g(r).

Claim 31 (Currently Amended): A method according to claim 29, wherein the spatial amplitude modulation $\alpha(x,y)$ is an at least substantially binary function whereby the phase-modulated wave front ~~a(x,y)~~ is generated with a binary phase-modulation.

Claim 32 (Original): A method according to claim 31, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, according to the following steps

determining a spatial relation η being a ratio between a size of the central part of the spatial filter and a size of the zero order component of the Fourier or Fresnel transformed amplitude-modulated wave front $\tilde{a}(f_x,f_y)$ at the position of the spatial filter,

determining a parameter K(η) expressing a relative amplitude of radiation within the central part of the spatial filter,

where expressions for η and K(η) are specific for a specific spatial profile of the amplitude modulated wave front a(x,y), and

adjusting the parameters η, C, Min(α(x,y)), Max(α(x,y)) and $\bar{\alpha}$ to at least substantially fulfill

$$K\bar{a}|C||cos(\psi_c)| = ½(Max(a(x,y)) + Min(a(x,y))),$$

in order to generate a predetermined phase-modulation.

Claim 33 (Currently Amended): A method according to claim 32, wherein η is determined according to

$$\eta = \gamma \frac{\Delta s \cdot \Delta s_f}{\lambda \cdot F},$$

where Δs is a size of the amplitude-modulated wave front a(x,y), Δs_f is a size of the central part of the spatial filter, γ is a geometrical parameter specific to a spatial profile of the amplitude modulated wave front a(x,y), λ is [[the]] wavelength of the electromagnetic radiation, and F is ~~the Focal~~ focal length of the Fourier or Fresnel transformation.

Claim 34 (Currently Amended): A method according to claim 29 [[15]], wherein the amplitude modulated wave front a(x,y) and the central part of the spatial filter at least substantially have a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, and ellipsoidal.

Claim 35 (Currently Amended): A method according to claim 32 [[31]], wherein the amplitude modulated wave front a(x,y) and the central part of the spatial filter have an at least substantially circular spatial profile, the steps of determining the parameters η and $K(\eta)$ comprising determining η and $K(\eta)$ according to

$$\eta = \frac{1}{0.61}\frac{\Delta r \cdot \Delta r_f}{\lambda \cdot F},$$

where Δr is [[the]] a radius of the amplitude-modulated wave front a(x,y) and Δr_f is [[the]] a radius of the central part of the spatial filter, and

$$K = 1 - J_0(1.22\pi\eta),$$

where J_0 is [[the]] a zero'th order Bessel function.

Claim 36 (Original): A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ has three or more different values, the method further comprising the step of, after the inverse Fourier transformation or the inverse Fresnel transformation, performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front

$o(x',y')$ to generate an at least substantially constant amplitude distribution.

Claim 37 (Original): A system for generating a phase-modulated wave front of electromagnetic radiation, said system comprising

a first deflecting and/or absorbing device for receiving an input wave front $E(x,y)$ of electromagnetic radiation, performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front by deflecting and/or absorbing parts of the wave front to generate a spatial amplitude distribution $a(x,y)$ in a plane transverse to a direction of propagation of the wave front, and emitting the amplitude modulated wave front $a(x,y)$,

means for Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

a spatial filter for receiving the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, phase shifting one or more first components in relation to one or more second components of the Fourier or Fresnel distribution and/or damping one or more third components in relation to one or more fourth components of the Fourier or Fresnel distribution, and emitting a filtered distribution $\tilde{a}'(f_x,f_y)$, said spatial filter being characterized by a filter function $H(f_x,f_y)$ which gives the damping and/or phase shift for each component of the Fourier or Fresnel

distribution $\tilde{a}(f_x,f_y)$,

means for inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation to form a phase-modulated wave front $o(x',y')$, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

Claim 38 (Original): A system according to claim 37, further comprising a controller for controlling the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, so as to generate a predetermined phase-modulated wave front $o(x',y')$.

Claim 39 (Currently Amended): A system according to claim 38, wherein the controller comprises interface means for addressing the first deflecting and/or absorbing device and/or the spatial filter and for transmitting <u>control</u> signals controlling the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$.

Claim 40 (Currently Amended): A system according to claim 39, wherein the controller further comprises holding means for holding information related to the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the controller being adapted to generate the control signals transmitted by the interface means on the basis of the information <u>held</u> ~~comprised~~ in the holding means.

Claim 41 (Original): A system according to claim 38, wherein the controller comprises electronic processing means for calculating the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, or parameters thereof.

Claim 42 (Original): A system according to claim 39, wherein the first deflecting and/or absorbing device comprises a matrix of deflecting and/or absorbing elements, and wherein said elements can be individually addressed by the interface means in order to control the deflection and/or absorption of each element individually.

Claim 43 (Original): A system according to claim 37, wherein the first deflecting and/or absorbing device provides a substantially continuous variation of absorption and/or deflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

Claim 44 (Original): A system according to claim 37, wherein the first deflecting and/or absorbing device further comprises an aperture for defining a transverse spatial profile for the amplitude modulated wave front $a(x,y)$.

Claim 45 (Original): A system according to claim 38, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a transverse spatial profile for

the amplitude modulated wave front a(x,y).

Claim 46 (Currently Amended): A system according to claim 37, wherein the means for Fourier or Fresnel ~~transformation~~ transforming and/or the means for inverse Fourier or inverse Fresnel ~~transformation~~ transforming is selected from the group consisting of achromatic lenses, Fourier lenses, doublets planar lenses, diffracting patterns, and free space propagation.

Claim 47 (Original): A system according to claim 37, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

Claim 48 (Original): A system according to claims 38, wherein the controller is adapted to individually control one or more phase shifting and/or damping elements for individually controlling the phase shift and/or damping of one or more components of the Fourier or Fresnel distribution.

Claim 49 (Currently Amended): A system according to claim 37, further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front o(x',y') and performing a spatial amplitude modulation α_2(x',y') on the phase modulated wave front o(x',y') by deflecting and/or absorbing parts of [[said]] the phase

modulated wave front in order to generate a wave front having an at least substantially constant amplitude distribution.

Claim 50 (Original): A system for generating a phase-modulated wave front of electromagnetic radiation, said system comprising

a first deflecting and/or absorbing device for receiving an input wave front $E(x,y)$ of electromagnetic radiation, performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front by deflecting and/or absorbing parts of the wave front to generate a spatial amplitude distribution $a(x,y)$ in a plane transverse to a direction of propagation of the wave front, and emitting the amplitude modulated wave front $a(x,y)$,

means for Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

a spatial filter for receiving the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, phase shifting a zero-order component of the Fourier or Fresnel distribution in relation to other components of the Fourier or Fresnel distribution and/or damping a zero-order component of the Fourier or Fresnel distribution in relation to other components of the Fourier or Fresnel distribution, and emitting a filtered distribution $\tilde{a}'(f_x,f_y)$, said spatial

filter being characterized by a filter function $H(f_x,f_y)$ which gives the damping and/or phase shift of the zero-order component in relation to other components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

means for inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation to form a phase-modulated wave front $o(x',y')$, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

Claim 51 (Original): A system according to claim 50, further comprising a controller for controlling the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, so as to generate a predetermined phase-modulated wave front $o(x',y')$.

Claim 52 (Currently Amended): A system according to claim 51, wherein the controller comprises interface means for addressing the first deflecting and/or absorbing device and/or the spatial filter and for transmitting <u>control</u> signals controlling the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$.

Claim 53 (Currently Amended): A system according to claim 52, wherein the controller further comprises holding means for holding information related to the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the controller being adapted to

generate the control signals transmitted by the interface means on the basis of the information held ~~comprised~~ in the holding means.

Claim 54 (Original): A system according to claim 51, wherein the controller comprises electronic processing means for calculating the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, or parameters thereof.

Claim 55 (Original): A system according to claim 52, wherein the first deflecting and/or absorbing device comprises a matrix of deflecting and/or absorbing elements, and wherein said elements can be individually addressed by the interface means in order to control the deflection and/or absorption of each element individually.

Claim 56 (Original): A system according to claim 55, wherein the first deflecting and/or absorbing device has a resolution equal to or higher than 100 elements/cm^2.

Claim 57 (Original): A system according to claim 55, wherein the first deflecting and/or absorbing device comprises at least 100 deflecting and/or absorbing elements.

Claim 58 (Original): A system according to claim 50, wherein the first deflecting and/or absorbing device provides a substantially continuous variation of absorption and/or deflection in a plane transverse to a direction of propagation of the electromagnetic

radiation.

Claim 59 (Original): A system according to claim 58, wherein the first deflecting and/or absorbing device is a silver halide film.

Claim 60 (Original): A system according to claim 50, wherein the first deflecting and/or absorbing device further comprises an aperture for defining a transverse spatial profile for the amplitude modulated wave front a(x,y).

Claim 61 (Currently Amended): A system according to claim 60, wherein the aperture defines a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, circular, <u>and</u> ellipsoidal for the amplitude modulated wave front a(x,y).

Claim 62 (Original): A system according to claim 51, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a transverse spatial profile for the amplitude modulated wave front a(x,y).

Claim 63 (Currently Amended): A system according to claim 62, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic,

pentagonal, hexagonal, circular, and ellipsoidal for the amplitude modulated wave front a(x,y).

Claim 64 (Currently Amended): A system according to claim 50, wherein the means for Fourier or Fresnel ~~transformation~~ transforming and/or the means for inverse Fourier or inverse Fresnel ~~transformation~~ transforming is selected from the group consisting of achromatic lenses, Fourier lenses, doublets planar lenses, diffracting patterns, and free space propagation.

Claim 65 (Original): A system according to claim 50, wherein the spatial filter is a phase contrast filter.

Claim 66 (Original): A system according to claim 50, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

Claim 67 (Original): A system according to claims 51, wherein the controller is adapted to individually control one or more phase shifting and/or damping elements for individually controlling the phase shift and/or damping of the zero-order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution.

Claim 68 (Currently Amended): A system according to claim 50, further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front o(x',y') and performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front o(x',y') by deflecting and/or absorbing parts of [[said]] the phase modulated wave front in order to generate a wave front having an at least substantially constant amplitude distribution.

Claim 69 (Currently Amended): A system according to claim 50, wherein the first deflecting and/or absorbing device is a reflective device comprising one or more reflecting surfaces adapted to receive the input wave front E(x,y) of electromagnetic radiation, reflect at least part of the received electromagnetic radiation and emit the reflected radiation as the amplitude modulated wave front $\alpha(x,y)$.

Claim 70 (Currently Amended): A system according to claim 50, wherein the first deflecting and/or absorbing device is a transmitting device being adapted to receive the input wave front of electromagnetic radiation, transmit at least part of the received electromagnetic radiation and emit the transmitted radiation as the amplitude modulated wave front.

Claim 71 (Currently Amended): A system according to claim 50, wherein the spatial

filter is a transmitting device being adapted to receive the Fourier or Fresnel distribution, transmit at least part of one or more Fourier or Fresnel components or transmit at least part of one or more Fourier or Fresnel components and phase shift one or more ~~of the~~ first components in relation to one or more ~~of the~~ second components of the Fourier or Fresnel distribution, and emit the transmitted radiation as the filtered distribution.

Claim 72 (Currently Amended): A system according to claim 50, wherein the spatial filter is a reflective device comprising one or more reflecting surfaces adapted to receive the Fourier or Fresnel distribution, reflect at least part of one or more Fourier or Fresnel components or reflect at least part of one or more Fourier or Fresnel components and phase shift one or more ~~of the~~ first components in relation to one or more ~~of the~~ second components of the Fourier or Fresnel distribution, and emit the reflected radiation as the filtered distribution.

Claim 73 (Currently Amended): A system according to claim 50, wherein the spatial filter has a central part for performing the filtering of the zero order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ and a surrounding part for performing the filtering of the higher order components, the surrounding part having a transmittivity or reflectivity ~~$A\in]0;1]$~~ $A\in\{0;1\}$ and the central part having a transmittivity or reflectivity ~~$B\in[0;1]$,~~ $B\in\{0;1\}$, and the relative phase shift of radiation filtered by the central part and the surrounding part being θ, where A, B, and θ are variables of the filter function $H(f_x,f_y)$

and forms a combined filter term C expressed as

$$C = \frac{B}{A} e^{i\theta} - 1 = |C| e^{i\Psi_C}\text{, and}$$

wherein a minimum value Min(α(x,y)), a maximum value Max(α(x,y)), and an average value $\bar{\alpha}$ can be assigned to the amplitude modulation α(x,y) performed by the first deflecting and/or absorbing device.

Claim 74 (Currently Amended): A system according to claim 73, wherein H(f_x,f_y) is adjusted to have A = B = 1 and $\theta = \pi$, and wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation α(x,y) according to

$$\cancel{a(x,y) = b(x,y) + \bar{b}[\tfrac{1}{2} \bar{g}]^{-1} g(r),}$$

$$\underline{a(x,y) = b(x,y) + \bar{b}\{\tfrac{1}{2} - \bar{g}\}^{-1}\ g(r),}$$

where b(x,y) is a binary function with an average value $\bar{b}$, g(r) is a function which <u>counterbalances</u> ~~counterbalance~~ effects represented by a synthetic reference wave g(r') of the system, and $\bar{g}$ is the average value of g(r).

Claim 75 (Currently Amended): A system according to claim 73, wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation α(x,y) according to an at least substantially binary function whereby the phase-modulated wave front ~~a(x,y)~~ is generated with a binary phase-modulation.

Claim 76 (Original): A system according to claim 75, wherein the first deflecting and/or absorbing device and the spatial filter are adapted to perform the spatial amplitude modulation $\alpha(x,y)$ and the filtering $H(f_x,f_y)$ according to

$$K\overline{a}|C||\cos(\psi_C)| = \tfrac{1}{2}(Max(a(x,y)) + Min(a(x,y))),$$

wherein η is a spatial relation being a ratio between a size of the central part of the spatial filter and a size of the zero order component of the Fourier or Fresnel transformed amplitude-modulated wave front $\tilde{a}(f_x,f_y)$ at the position of the spatial filter,

$K(\eta)$ is a parameter expressing a relative amplitude of radiation within the central part of the spatial filter, and

where expressions for η and $K(\eta)$ are specific for a specific spatial profile of the amplitude modulated wave front $a(x,y)$.

Claim 77 (Currently Amended): A system according to claim 76, wherein η is determined according to

$$\eta = \gamma \frac{\Delta s \cdot \Delta s_f}{\lambda \cdot F},$$

where Δs is a size of the amplitude-modulated wave front a(x,y), Δs_f is a size of the central part of the spatial filter, γ is a geometrical parameter specific to a spatial profile of the amplitude modulated wave front a(x,y), λ is [[the]] a wavelength of the electromagnetic radiation, and F is [[the]] a focal length of the means for Fourier or Fresnel transforming [[means]].

Claim 78 (Currently Amended): A system according to claim 73 [[60]], wherein the spatial profile of the amplitude modulated wave front a(x,y) and the central part of the spatial filter is defined to have a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, and ellipsoidal.

Claim 79 (Currently Amended): A system according to claim 76 [[60]], wherein the spatial profile of the amplitude modulated wave front a(x,y) and the central part of the spatial filter is defined to ~~have an~~ be at least substantially circular, and wherein the parameters η and K(η) are determined according to

$$\eta = \frac{1}{0.61} \frac{\Delta r \cdot \Delta r_f}{\lambda \cdot F},$$

where Δr is [[the]] a radius of the amplitude-modulated wave front a(x,y) and Δr_f is [[the]] a radius of the central part of the spatial filter, and

$$K = 1 - J_o(1.22\pi\eta),$$

where J_0 is [[the]] a zero'th order Bessel function.

Claim 80 (Original): A system according to claim 50, wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation $\alpha(x,y)$ according to a function having three or more different values, the system further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front $o(x',y')$ and performing a spatial amplitude modulation $\alpha_2(x',y')$ to generate an at least substantially constant amplitude distribution.